

Gag AF110965 BW mod

ATGGGCGCCGCGCCAGCATCCTGCGCGGCGCAAGCTGGACGCCTGGGAGCGCATCCGCC TGCGCCCGGCGGCAAGAAGTGCTACATGATGAAGCACCTGGTGTGGGCCAGCCGCGAGCT GGAGAAGTTCGCCCTGAACCCCGGCCTGCTGGAGACCAGCGAGGGCTGCAAGCAGATCATC CGCCAGCTGCACCCCGCCCTGCAGACCGGCAGCGAGGAGCTGAAGAGCCTGTTCAACACCG TGGCCACCCTGTACTGCGTGCACGAGAGATCGAGGTCCGCGACACCAAGGAGGCCCTGGA CAAGATCGAGGAGGAGCAGAACAAGTGCCAGCAGAAGATCCAGCAGGCCGAGGCCGCCGAC AAGGGCAAGGTGAGCCAGAACTACCCCATCGTGCAGAACCTGCAGGGCCAGATGGTGCACC AGGCCATCAGCCCCGCACCCTGAACGCCTGGGTGAAGGTGATCGAGGAGAAGGCCTTCAG CCCCGAGGTGATCCCCATGTTCACCGCCCTGAGCGAGGGCCCACCCCCCAGGACCTGAAC ACGATGTTGAACACCGTGGGCGGCCACCAGGCCGCCATGCAGATGCTGAAGGACACCATCA ACGAGGAGGCCGCCGAGTGGGACCGCGTGCACCCCGTGCACGCCCCATCGCCCCCGG CCAGATGCGCGAGCCCCGCGGCAGCGACATCGCCGGCACCACCAGCACCCTGCAGGAGCAG ATCGCCTGGATGACCAGCAACCCCCCATCCCCGTGGGCGACATCTACAAGCGGTGGATCA TCCTGGGCCTGAACAAGATCGTGCGGATGTACAGCCCCGTGAGCATCCTGGACATCAAGCA GGGCCCAAGGAGCCCTTCCGCGACTACGTGGACCGCTTCTTCAAGACCCTGCGCGCCGAG CAGAGCACCCAGGAGGTGAAGAACTGGATGACCGACACCCTGCTGGTGCAGAACGCCAACC CCGACTGCAAGACCATCCTGCGCGCTCTCGGCCCCGGCGCCAGCCTGGAGGAGATGATGAC CGCCTGCCAGGCGTGGGCGGCCCCAGCCACAAGGCCCGCGTGCTGGCCGAGGCGATGAGC CAGGCCAACACCAGCGTGATGATGCAGAAGAGCCAACTTCAAGGGCCCCCGGCGCATCGTCA GGGCTGCTGGAAGTGCGGCAAGGAGGGCCACCAGATGAAGGACTGCACCGAGCGCCAGGCC AACTTCCTGGGCAAGATCTGGCCCAGCCACAAGGGCCGCCCGGCAACTTCCTGCAGAGCC GCCCGAGCCCACCGCCCCCCCCGCGAGAGCTTCCGCTTCGAGGAGACCACCCCCGGCCA GAAGCAGGAGGACCAGCCTGACCAGCCTGAAGAGCCTGTTCGGCAACGAC CCCCTGAGCCAGTAA

FIG. 1



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ATGGGCGCCGCGCCAGCATCCTGCGCGGGGAGAAGCTGGACAAGTGGGAGAAGATCCGCC TGCGCCCGGCGGCAAGAAGCACTACATGCTGAAGCACCTGGTGTGGGCCAGCCGCGAGCT GGAGGGCTTCGCCCTGAACCCCGGCCTGCTGGAGACCGCCGAGGGCTGCAAGCAGATCATG AAGCAGCTGCAGCCCGCCCTGCAGACCGGCACCGAGGAGCTGCGCAGCCTGTACAACACCG TGGCCACCCTGTACTGCGTGCACGCCGGCATCGAGGTCCGCGACACCAAGGAGGCCCTGGA CAAGATCGAGGAGGAGCAGAACAAGTCCCAGCAGAAGACCCAGCAGGCCAAGGAGGCCGAC GGCAAGGTGAGCCAGAACTACCCCATCGTGCAGAACCTGCAGGGCCAGATGGTGCACCAGG CCATCAGCCCCGCACCCTGAACGCCTGGGTGAAGGTGATCGAGGAGAAGGCCTTCAGCCC CGAGGTGATCCCCATGTTCACCGCCCTGAGCGAGGGCGCCACCCCCAGGACCTGAACACG ATGTTGAACACCGTGGGCGGCCACCAGGCCGCCATGCAGATGCTGAAGGACACCATCAACG GATGCGCGACCCCGCGGCAGCACCTCGCCGGCGCCACCAGCACCCTGCAGGAGCAGATC GCCTGGATGACCAGCAACCCCCCGTGCCCGTGGGCGACATCTACAAGCGGTGGATCATCC TGGGCCTGAACAAGATCGTGCGGATGTACAGCCCCGTGAGCATCCTGGACATCCGCCAGGG CCCCAAGGAGCCCTTCCGCGACTACGTGGACCGCTTCTTCAAGACCCTGCGCGCCGAGCAG GCCACCCAGGACGTGAAGAACTGGATGACCGAGACCCTGCTGGTGCAGAACGCCAACCCCG ACTGCAAGACCATCCTGCGCGCTCTCGGCCCCGGCGCCACCCTGGAGGAGATGATGACCGC CTGCCAGGGCGTGGGCGGCCCCGGCCACAAGGCCCGCGTGCTGGCCGAGGCGATGAGCCAG GCCAACAGCGTGAACATCATGATGCAGAAGAGCCAACTTCAAGGGCCCCCGGCGCAACGTCA AGTGCTTCAACTGCGGCAAGGAGGGCCACATCGCCAAGAACTGCCGCGCCCCCCGCAAGAA GGGCTGCTGGAAGTGCGGCAAGGAGGCCACCAGATGAAGGACTGCACCGAGCGCCAGGCC AACTTCCTGGGCAAGATCTGGCCCAGCCACAAGGGCCGCCCGGCAACTTCCTGCAGAACC GCAGCGAGCCCGCCCCCCCCCCCCCCCCCCCCGCGAGAGCTTCCGCTTCGA GGAGACCACCCCGCCCCAAGCAGGAGCCCAAGGACCGCGAGCCCTACCGCGAGCCCCTG ACCGCCTGCGCAGCCTGTTCGGCAGCGGCCCCCTGAGCCAGTAA

FIG. 2



Env_AF110968_C_BW_opt

--> signal peptide (1-81)
ATGCGCGTGATGGGCATCCTGAAGAACTACCAGCAGTGGTGGATGTGGGGCATCCTGGGCTTCTGGATGCTGATCA /--> gp120/140/160 (82)
TCAGCAGCGTGGTGGCAACCTGTGGGTGACCGTGTACTACGGCGTGCCCGTGTGGAAGGAGGCCAAGACCACCCT GACCCCAACCCCAGGAGATCGTGCTGGAGAACGTGACCGAGAACTTCAACATGTGGAAGAACGACATGGTGGACC AGATGCACGAGGACATCATCAGCCTGTGGGACCAGAGCCTGAAGCCCTGCGTGAAGCTGACCCCCCTGTGCGTGAC CCTGAAGTGCCGCAACGTGAACGCCACCAACAACATCAACAGCATGATCGACAACAGCAACAAGAGGGCGAGATGAAG AACTGCAGCTTCAACGTGACCACCGAGCTGCGCGACCGCAAGCAGGAGGTGCACGCCCTGTTCTACCGCCTGGACG TGGTGCCCCTGCAGGGCAACAACAGCAACGAGTACCGCCTGATCAACTGCAACACCAGCGCCATCACCCAGGCCTG CCCCAAGGTGAGCTTCGACCCCATCCCCATCCACTACTGCACCCCGCCGGCTACGCCATCCTGAAGTGCAACAAC CAGACCTTCAACGGCACCGGCCCCTGCAACAACGTGAGCAGCGTGCAGTGCGCCCACGGCATCAAGCCCGTGGTGA GCACCCAGCTGCTGCACGGCAGCCTGGCCAAGGGCGAGATCATCATCCGCAGCGAGAACCTGGCCAACAACGC GTGCGCATCGGCCCGGCCAGACCTTCTACGCCACCGGCGAGATCATCGGCGACATCCGCCAGGCCTACTGCATCA TCAACAAGACCGAGTGGAACAGCACCCTGCAGGGCGTGAGCAAGAAGCTGGAGGAGCACTTCAGCAAGAAGGCCAT TGCGACACCAGCCAGCTGTTCAACAGCACCTACAGCCCCAGCTTCAACGGCACCGAGAACAAGCTGAACGGCACCA TCACCATCACCTGCCGCATCAAGCAGATCATCAACATGTGGCAGAAGGTGGGCCGCGCCATGTACGCCCCCCCAT CGCCGGCAACCTGACCTGCGAGAGCAACATCACCGGCCTGCTGCTGACCCGCGACGGCGGCAAGACCGGCCCCAAC GACACCGAGATCTTCCGCCCCGGCGGCGGCGACATGCGCGACAACTGGCGCAACGAGCTGTACAAGTACAAGGTGG gp120(1512)<--\/-->(1513)gp41 CATCGGCGCCGTGTTCCTGGGCTTCCTGGGCGCCGCCGGCAGCACCATGGGCGCCGCCAGCATCACCCTGACCGTG CAGGCCCGCCTGCTGCTGAGCGGCATCGTGCAGCAGCAGCAACCTGCTGCGCGCCCATCGAGGCCCAGCAGCACC TGCTGCAGCTGACCGTGTGGGGCATCAAGCAGCTGCAGACCCGCATCCTGGCCGTGGAGCGCTACCTGAAGGACCA GCAGCTGCTGGGCATCTGGGGCTGCAGCGGCAAGCTGATCTGCACCACCGCCGTGCCCTGGAACAGCAGCTGGAGC AACCGCAGCCACGACGAGATCTGGGACAACATGACCTGGATGCAGTGGGACCGCGAGATCAACAACTACACCGACA CCATCTACCGCCTGCTGGAGGAGAGCCAGAACCAGCAGGAGAAGAACGAGAAGGACCTGCTGGCCCTGGACAGCTG gp140(2025)<--\/
GCAGAACCTGTGGAACTGGTTCAGCATCACCAACTGGCTGTGGTACATCATCATCATCATGATCGTGGGCGGC</pre> CTGATCGGCCTGCGCATCATCTTCGCCGTGCTGAGCATCGTGAACCGCGTGCGCCAGGGCTACAGCCCCCTGCCCT TCCAGACCCTGACCCCCAACCCCCGCGAGCCCGACCGCCTGGGCCGCATCGAGGAGGAGGGCGGCGAGCAGGACCG CGGCCGCAGCATCCGCCTGGTGAGCGGCTTCCTGGCCCTGGCCTGGGACGACCTGCGCAGCCTGTGCCTGTTCAGC TGAAGTACCTGGGCAGCCTGGTGCAGTACTGGGGCCTGGAGCTGAAGAAGAGCGCCATCAGCCTGCTGGACACCAT CGCCATCGCCGTGGCCGAGGGCACCGCATCATCGAGTTCATCCAGCGCATCTGCCGCGCCCATCCGCAACATC gp160, gp41(2547)<--\
CCCCGCCGCATCCGCCAGGGCTTCGAGGCCGCCCTGCAGTAA



Env_AF110975_C_BW_opt

--> signal peptide (1-72)
ATGCGCGTGCGCGGCATCCTGCGCAGCTGGCAGCAGCTGGTGGATCTGGGGCATCCTGGGCTTCTGGATCTGCAGCG gp120/140/160 (72) CCTGGGCAACCTGTGGGTGACCGTGTACGACGGCGTGCCCGTGTGGCGCGAGGCCAGCACCACCCTGTTCTGCGC CCCCAGGAGATCGAGCTGGACAACGTGACCGAGAACTTCAACATGTGGAAGAACGACATGGTGGACCAGATGCACG AGGACATCATCAGCCTGTGGGACCAGAGCCTGAAGCCCGCGTGAAGCTGACCCCCCTGTGCGTGACCCTGAAGTG CACCAACTACAGCACCAACTACAGCAACACCATGAACGCCACCAGCTACAACAACAACACCACCGAGGAGATCAAG AACTGCACCTTCAACATGACCACCGAGCTGCGCGACAAGAAGCAGCAGGTGTACGCCCTGTTCTACAAGCTGGACA TCGTGCCCCTGAACAGCAACAGCAGCGAGTACCGCCTGATCAACTGCAACACCAGCGCCATCACCCAGGCCTGCCC CAAGGTGAGCTTCGACCCCATCCCATCCACTACTGCGCCCCGCCGGCTACGCCATCCTGAAGTGCAAGAACAAC ACCAGCAACGGCACCGGCCCCTGCCAGAACGTGAGCACCGTGCAGTGCACCCACGGCATCAAGCCCGTGGTGAGCA CCCCCTGCTGCTGAACGGCAGCCTGGCCGAGGGCGGCGAGATCATCATCCGCAGCAAGAACCTGAGCAACAACGC CTACACCATCATCGTGCACCTGAACGACAGCGTGGAGATCGTGTGCACCCGCCCCAACAACAACACCCCGCAAGGGC ATCCGCATCGGCCCGGCCAGACCTTCTACGCCACCGAGAACATCATCGGCGACATCCGCCAGGCCCACTGCAACA TCAGCGCCGGCGAGTGGAACAAGGCCGTGCAGCGCGTGAGCGCCAAGCTGCGCGAGCACTTCCCCAACAAGACCAT TGCAACACCAGCAAGCTGTTCAACAGCAGCTACAACGGCACCAGCTACCGCGGCACCGAGAGCAACAGCAGCATCA TCACCCTGCCCTGCCGCATCAAGCAGATCATCGACATGTGGCAGAAGGTGGGCCGCGCCATCTACGCCCCCCCAT CGAGGGCAACATCACCTGCAGCAGCAGCATCACCGGCCTGCTGCTGGCCCGCGACGGCGGCCTGGACAACATCACC ACCGAGATCTTCCGCCCCAGGGCGGCGACATGAAGGACAACTGGCGCAACGAGCTGTACAAGTACAAGGTGGTGG gp120(1509)<--\/-->(1510)gp41
AGATCAAGCCCCTGGGCGTGGCCCCCCCCCGAGGCCAAGCGCCGTGGTGGAGAAGCGCGCGTGGGCAT CGGCGCCGTGATCTTCGGCTTCCTGGGCGCCGCCGGCAGCAACATGGGCGCCGCCAGCATCACCCTGACCGCCCAG GCCCGCCAGCTGCTGAGCGGCATCGTGCAGCAGCAGCAGCACCTGCTGCGCGCCCATCGAGGCCCAGCAGCACATGC TGCAGCTGACCGTGTGGGGCATCAAGCAGCTGCAGGCCCGCGTGCTGGCCATCGAGCGCTACCTGAAGGACCAGCA GCTGCTGGGCATCTGGGGCTGCAGCGGCAAGCTGATCTGCACCACCACCGTGCCCTGGAACAGCAGCTGGAGCAAC AAGACCCAGGGCGAGATCTGGGAGAACATGACCTGGATGCAGTGGGACAAGGAGATCAGCAACTACACCGGCATCA TCTACCGCCTGCTGGAGGAGGCCAGAACCAGCAGGAGCAGAACGAGAAGGACCTGCTGGCCCTGGACAGCCGCAA gp140(2022)<--\/
CAACCTGTGGAGCTGGTTCAACATCAGCAACTGGCTGTGGTACATCATCATCATCATGATCGTGGGCGGCCTG ATCGGCCTGCGCATCATCTTCGCCGTGCTGAGCATCGTGAACCGCGTGCGCCAGGGCTACAGCCCCCTGAGCTTCC CCGCAGCATCCGCCTGGTGCAGGGCTTCCTGGCCCTGGCCTGGGACGACCTGCGCAGCCTGTGCCTGTTCAGCTAC CACCGCCTGCGCGACCTGATCCTGGTGACCGCCCGCGTGGTGGAGCTGCTGGGCCGCAGCAGCCCCCGCGGCCTGC AGCGCGGCTGGGAGGCCCTGAAGTACCTGGGCAGCCTGGTGCAGTACTGGGGCCTGGAGCTGAAGAAGAGCGCCAC gp160, gp41(2565)<--\
CGCGCCTTCTGCAACATCCCCGCCGCGCGTGCGCCAGGGCTTCGAGGCCGCCCTGCAGTAA



Gag_AF110965_BW_opt ATGGCCCCCGCCCAGCATCCTGCGCGGCGGCAAGCTGGACGCCTGGGAGCGCATCCGCCTGCGCCCCGG CGGCAAGAAGTGCTACATGATGAAGCACCTGGTGTGGGGCCAGCCGCGAGCTGGAGAAGTTCGCCCTGAACC CCGGCCTGCTGGAGACCAGCGGGGCTGCAAGCAGATCATCCGCCAGCTGCACCCCGCCCTGCAGACCGGC AGCGAGGAGCTGAAGAGCCTGTTCAACACCGTGGCCACCCTGTACTGCGTGCACGAGAAGATCGAGGTGCG CGACACCAAGGAGGCCCTGGACAAGATCGAGGAGGAGCAGAACAAGAGCCAGCAGAAGATCCAGCAGGCCG AGGCCGCCGACAAGGCCAAGGTGAGCCAGAACTACCCCATCGTGCAGAACCTGCAGGGCCAGATGGTGCAC CAGGCCATCAGCCCCGCACCCTGAACGCCTGGGTGAAGGTGATCGAGGAGAAGGCCTTCAGCCCCGAGGT GATCCCCATGTTCACCGCCCTGAGCGAGGGCGCCCCCCAGGACCTGAACACCATGCTGAACACCGTGG GCGCCACCAGGCCGCCATGCAGATGCTGAAGGACACCATCAACGAGGAGGCCGCCGAGTGGGACCGCGTG CACCAGCACCCTGCAGGAGCAGATCGCCTGGATGACCAGCAACCCCCCCATCCCCGTGGGCGACATCTACA AGCGCTGGATCATCCTGGGCCTGAACAAGATCGTGCGCATGTACAGCCCCGTGAGCATCCTGGACATCAAG CAGGGCCCCAAGGAGCCCTTCCGCGACTACGTGGACCGCTTCTTCAAGACCCTGCGCGCGAGCAGAGCAC CCAGGAGGTGAAGAACTGGATGACCGACACCCTGCTGGTGCAGAACGCCAACCCCGACTGCAAGACCATCC TGCGCGCCTGGGCCCCGGCGCCAGCCTGGAGGAGATGATGACCGCCTGCCAGGGCGTGGGCGGCCCCAGC CAAGGGCCCCCGCGCATCGTGAAGTGCTTCAACTGCGGCAAGGAGGGCCACATCGCCGCAACTGCCGCG CCCCCGCAAGAAGGGCTGCTGGAAGTGCGGCAAGGAGGGCCACCAGATGAAGGACTGCACCGAGCGCCAG GCCAACTTCCTGGGCAAGATCTGGCCCAGCCACAAGGGCCGCCCGGCAACTTCCTGCAGAGCCGCCCGA GCCCACCGCCCCCCCCGAGAGCTTCCGCTTCGAGGAGACCACCCCCGGCCAGAAGCAGGAGAGCAAGG ACCGCGAGACCCTGACCAGCCTGAAGAGCCTGTTCGGCAACGACCCCCTGAGCCAGTAA

FIG. 5



Gag_AF110967_BW_opt ATGGGCGCCCGCGCAGCATCCTGCGCGGGGAGAAGCTGGACAAGTGGGAGAAGATCCGCCTGCGCCCCGG CGGCAAGAAGCACTACATGCTGAAGCACCTGGTGTGGGCCAGCCGCGAGCTGGAGGGCTTCGCCCTGAACC ACCGAGGAGCTGCGCAGCCTGTACAACACCGTGGCCACCCTGTACTGCGTGCACGCCGGCATCGAGGTGCG CGACACCAAGGAGGCCCTGGACAAGATCGAGGAGGAGCAGAACAAGACCAGCAGGAGACCAGCAGGCCA AGGAGGCCGACGGCAAGGTGAGCCAGAACTACCCCATCGTGCAGAACCTGCAGGGCCAGATGGTGCACCAG GCCATCAGCCCCGCACCCTGAACGCCTGGGTGAAGGTGATCGAGGAGAAGGCCTTCAGCCCCGAGGTGAT CCCCATGTTCACCGCCCTGAGCGAGGGCGCCACCCCCAGGACCTGAACACCATGCTGAACACCGTGGGCG GCCACCAGGCCGCCATGCAGATGCTGAAGGACACCATCAACGAGGAGGCCGCCGAGTGGGACCGCCTGCAC CCCGTGCAGGCCGCCCGTGGCCCCGGCCAGATGCGCGACCCCGGGGCAGCGACATCGCCGGCGCCAC CAGCACCCTGCAGGAGCAGATCGCCTGGATGACCAGCAACCCCCCGTGCCCGTGGGCGACATCTACAAGC GC|TGGATCATCCTGGGCCTGAACAAGATCGTGCGCATGTACAGCCCCGTGAGCATCCTGGACATCCGCCAG GGACGTGAAGAACTGGATGACCGAGACCCTGCTGGTGCAGAACGCCAACCCCGACTGCAAGACCATCCTGC GCGCCTGGGCCCCGGCCCACCCTGGAGGAGATGATGACCGCCTGCCAGGGCGTGGGCGGCCCCGGCCAC AAGGCCCGCGTGCTGGCCGAGGCCATGAGCCAGCCCAACAGCGTGAACATCATGATGCAGAAGAGCAACTT CAAGGGCCCCCCCGCGCAACGTGAAGTGCTTCAACTGCGGCAAGGAGGGCCCACATCGCCAAGAACTGCCGCG CCCCCGCAAGAAGGGCTGCTGGAAGTGCGGCAAGGAGGCCCACCAGATGAAGGACTGCACCGAGCGCCAG GCCAACTTCCTGGGCAAGATCTGGCCCAGCCACAAGGGCCGCCCGGCAACTTCCTGCAGAACCGCAGCGA GCCGCCGCCCCACCGTGCCCACCGCCCCCCCGCGAGAGCTTCCGCTTCGAGGAGACCACCCCCGCCC CCAAGCAGGAGCCCAAGGACCGCGAGCCCTACCGCGAGCCCCTGACCGCCCTGCCCAGCCTGTTCGGCAGC GGCCCCTGAGCCAGTAA

FIG. 6